

Abstract

A device to regulate current produced by an induction machine responsive to a plurality of phase current signals. The motor produces torque for application on a shaft. A processing and drive circuit responsive to a direct current command signal and a quadrature current command signal produces phase current signals for input to the motor. A command circuit responsive to the phase current signals, an angular position of said shaft, and a voltage input command signal to produce a direct current error signal and a quadrature current error signal. A control circuit responsive to the direct and quadrature current error signals produces the direct voltage signal command and the quadrature signal command. The control circuit has a direct and quadrature proportional gain, integrator and clamp circuits. An algorithm produces limited or clamped voltage modulation index signals to obtain maximum efficiency and maximum torque per ampere in the speed range.

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